

Serial No. 09/701,132  
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1-31. (Cancelled)

32. (Previously Presented) An isolated and purified nucleic acid molecule comprising the nucleotide sequence of SEQ ID NO. 13.

33. (Canceled)

34. (Previously Presented) A composition consisting essentially of an isolated nucleic acid molecule consisting essentially of the nucleotide sequence of SEQ ID NO. 13.

35. (Currently Amended) The composition of claim 34, further comprising ~~one or more nucleic acid molecules comprising the nucleotide sequence of any one of either~~ SEQ ID NO: 56 or 57 ~~1 to 12 or 14 to 68, or a part thereof.~~

36. (Cancelled)

37. (Currently Amended) ~~1-~~ A primer comprising a ~~nucleotide sequence corresponding to the nucleotide sequence from position~~ about 10 to about 20 nucleotides of position 586 to 606 or position 791 to 810 of SEQ ID NO: 13.

38. (Previously Presented) A composition comprising the primer according to claim 37.

39. (Cancelled)

40. (Currently Amended) A method of detecting ~~the~~ ~~presence of a particular~~ H serotype of *E. coli* in a sample, the method comprising the following steps:

(a) ~~contacting a gene of an *E. coli* in the sample, under hybridizing conditions, with a~~ at least one nucleic acid molecule according to claim 32 wherein the at least one nucleic acid molecule is specific for a particular flagellin gene associated with the particular H serotype of *E. coli* in ~~conditions sufficient to allow the nucleic acid molecule to hybridise to a nucleic acid molecule having a complementary nucleic acid sequence; and~~

(b) detecting any hybridized nucleic acid molecules wherein the presence of specifically hybridized nucleic acid molecules indicates the presence of that H serotype of *E. coli* in the sample ~~whether the nucleic acid molecule is hybridized to the gene, to detect the H serotype of the *E. coli* in the sample.~~

41. (Currently Amended) A method of detecting ~~the~~ a particular H serotype of *E. coli* in a sample, the method comprising the following steps:

(a) ~~contacting a gene of an *E. coli* in the sample, under hybridizing conditions, with a~~ pair of nucleic acid molecule molecules wherein one of the pair is specific for a flagellin gene associated with the particular H serotype of *E. coli* and is a nucleic acid molecule according to claim 32 and

the other one of the pair comprises SEQ ID NO: 57; and one or more nucleic acid molecules comprising a nucleotide sequence of any one of SEQ ID NO: 1 to 12 or 14 to 44 or 46 to 55 or 57 to 68 or a part thereof, in conditions sufficient to allow at least one of the nucleic acid molecules to hybridise to a nucleic acid molecule having a complementary nucleic acid sequence; and

(b) detecting any hybridized nucleic acid molecules wherein the presence of hybridized nucleic acid molecules signifies the presence of the particular H serotype of E. coli ~~whether one or more of the at least one nucleic acid molecules is hybridized to the gene, to detect the H serotype of the E. coli in the sample.~~

42. (Previously Presented) A method according to claim 40 or 41 wherein the hybridized nucleic acid molecules are detected by Southern Blot analysis.

43-45. (Cancelled)

46. (Currently amended) A method for the detecting the presence of a H and O serotype of E. coli in a sample, the method comprising the following steps:

(a) contacting a gene of the E. coli the sample, under hybridizing conditions, with at least one pair of nucleic acid molecules wherein one of the pair is a nucleic acid molecule selected from the group consisting of:  
~~wbdh (nucleotide position 739 to 1932 of SEQ ID NO: 45,~~  
~~wzx (nucleotide position 8646 to 9911 of SEQ ID NO: 45,~~

~~wzy (nucleotide position 9901 to 10953 of SEQ ID NO: 45,~~  
~~wbdM (nucleotide position 11821 to 12945 of SEQ ID NO: 45,~~  
wbdN (nucleotide position 79 to 861 of SEQ ID NO: 56),  
wbdO (nucleotide position 2011 to 2757 of SEQ ID NO: 56),  
wbdP (nucleotide position 5257 to 6471 of SEQ ID NO: 56),  
wbdR (nucleotide position 13156 to 13821 of SEQ ID NO: 56),  
wzx (nucleotide position 2744 to 4135 of SEQ ID NO: 56),  
wzy (nucleotide position 858 to 2042 of SEQ ID NO: 56),  
~~in conditions sufficient to allow the nucleic acid molecule to~~  
~~hybridise to a nucleic acid molecule having a complementary~~  
~~nucleic acid sequence~~ and the other one of the pair is specific  
for a flagellin gene of *E. coli* and comprises SEQ ID NO: 57;

(b) ~~contacting a gene of an *E. coli* in the~~  
sample with a nucleic acid molecule according to claim 32 under  
hybridizing conditions, ~~in conditions sufficient to allow the~~  
~~nucleic acid molecule to hybridise to a nucleic acid molecule~~  
~~having a complementary nucleic acid sequence; and~~

(c) detecting any hybridized nucleic acid  
molecules wherein the presence of hybridized nucleic acid  
molecules signifies the presence of ~~whether the nucleic acid~~  
~~molecules are hybridized to the genes, to detect the H and O~~  
serotype of the *E. coli* in the sample.

47. (Currently Amended) A method for detecting the  
presence of a particular H and O serotype of *E. coli* in a  
sample, the method comprising the following steps:

(a) contacting the sample, under hybridizing  
conditions, ~~a gene of the *E. coli* with a~~ at least one nucleic

acid molecule derived from and specific for a gene involved in the synthesis of a particular *E. coli* O antigen, the gene encoding a transferase enzyme or an enzyme involved in the transport or processing of a polysaccharide or oligosaccharide unit wherein the nucleic acid molecule is selected from the group consisting of:

~~wbdh (nucleotide position 739 to 1932 of SEQ ID NO: 45,~~  
~~wzx (nucleotide position 8646 to 9911 of SEQ ID NO: 45,~~  
~~wzy (nucleotide position 9901 to 10953 of SEQ ID NO: 45,~~  
~~wbdM (nucleotide position 11821 to 12945 of SEQ ID NO: 45,~~  
wbdN (nucleotide position 79 to 861 of SEQ ID NO: 56),  
wbdO (nucleotide position 2011 to 2757 of SEQ ID NO: 56),  
wbdP (nucleotide position 5257 to 6471 of SEQ ID NO: 56),  
wbdR (nucleotide position 13156 to 13821 of SEQ ID NO: 56),  
wzx (nucleotide position 2744 to 4135 of SEQ ID NO: 56),  
wzy (nucleotide position 858 to 2042 of SEQ ID NO: 56);

(b) ~~contacting a gene of an *E. coli* in the sample, under hybridizing conditions, with a nucleic acid molecule according to claim 32 and one or more nucleic acid molecules comprising a nucleotide sequence of any one of 1 to 12 or 14 to 44 or 46 to 55 or 57 to 68 or a part thereof, in conditions sufficient to allow at least one of the nucleic acid molecules to hybridise to a nucleic acid sequence; and~~

(c) contacting the sample, under hybridizing conditions with a nucleic acid molecule comprising SEQ ID NO:57; and

(ed) detecting whether the any hybridized nucleic acid molecules wherein the presence of hybridized

nucleic acid molecules signifies the presence of the particular  
H and O serotype ~~nucleic acid molecules are hybridized to the~~  
~~genes, to detect the H and O serotype of the E. coli in the~~  
~~sample.~~

48. (Currently Amended) A method according to claim  
46 or 47 wherein the nucleic acid molecule of step (a) is a  
forward primer or a reverse primer selected from the group  
consisting of

Forward primer ( <del>base position of SEQ</del> <del>ID NO:1</del> )	Reverse Primer ( <del>base position of SEQ</del> <del>ID NO:1</del> )
<del>739-757</del>	<del>1941-1924</del>
<del>925-942</del>	<del>1731-1714</del>
<del>925-942</del>	<del>1347-1330</del>
<del>1165-1182</del>	<del>1731-1714</del>
<del>8646-8663</del>	<del>9908-9891</del>
<del>8906-8923</del>	<del>9468-9451</del>
<del>9150-9167</del>	<del>9754-9737</del>
<del>9976-9996</del>	<del>10827-10807</del>
<del>10113-10130</del>	<del>10484-10467</del>
<del>10931-10949</del>	<del>11824-11796</del>
<del>11821-11844</del>	<del>12945-12924</del>
<del>12042-12059</del>	<del>12447-12430</del>
<del>12258-12275</del>	<del>12698-12681</del>

Forward primer sequence	Reverse Primer sequence
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(nucleotide positions of SEQ ID NO:2)	(nucleotide positions of SEQ ID NO:2)
79-96	861-844
184-201	531-514
310-327	768-751
858-875	2042-2025
1053-1070	1619-1602
1278-1295	1913-1896
2011-2028	2757-2740
2110-2127	2493-2476
2305-2322	2682-2665
2744-2761	4135-4118
2942-2959	3628-3611
5257-5274	6471-6454
5440-5457	5973-5956
5707-5724	6231-6214
13261-13278	13629-13612
13384-13401	13731-13714

49. (Previously Presented) A method according to claim 46 or 47 wherein the hybridised nucleic acid molecules are detected by Southern Blot analysis.

50-55. (Cancelled)

56. (Previously Presented) A method according to claim 40 or 41 wherein the sample is selected from the group consisting

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of a sample derived from food, a sample derived from faeces and a sample derived from a patient or animal.

57. (Currently Amended) A kit for identifying the H serotype of *E. coli*, the kit comprising a nucleic acid molecule according to claim 32, a primer according to claim 37, or a composition according to claim 34, or 35 ~~or 39~~.

58. (Currently Amended) A kit for identifying the H and O serotype of *E. coli*, the kit comprising:

(a) a nucleic acid molecule according to claim 32; and

(b) at least one nucleic acid molecule selected from the group consisting of:

~~wbdH (nucleotide position 739 to 1932 of SEQ ID NO: 45),~~  
~~wzx (nucleotide position 8646 to 9911 of SEQ ID NO: 45),~~  
~~wzy (nucleotide position 9901 to 10953 of SEQ ID NO: 45),~~  
~~wbdM (nucleotide position 11821 to 12945 of SEQ ID NO: 45),~~  
wbdN (nucleotide position 79 to 861 of SEQ ID NO: 56),  
wbdO (nucleotide position 2011 to 2757 of SEQ ID NO: 56),  
wbdP (nucleotide position 5257 to 6471 of SEQ ID NO: 56),  
wbdR (nucleotide position 13156 to 13821 of SEQ ID NO: 56),  
wzx (nucleotide position 2744 to 4135 of SEQ ID NO: 56) and  
wzy (nucleotide position 858 to 2042 of SEQ ID NO: 56).

59. (Currently Amended) A kit for identifying the H and O serotype of *E. coli*, the kit comprising:



(a) a nucleic acid molecule according to claim 32 ~~and one or more nucleic acid molecules comprising the nucleotide sequence of any one of SEQ ID NO: 1 to 12 or 14 to 44 or 46 to 55 or 57 to 68 or a part thereof; and~~

(b) at least one nucleic acid molecule selected from the group consisting of:

~~wbdH (nucleotide position 739 to 1932 of SEQ ID NO: 45),~~  
~~wzx (nucleotide position 8646 to 9911 of SEQ ID NO: 45),~~  
~~wzy (nucleotide position 9901 to 10953 of SEQ ID NO: 45),~~  
~~wbdM (nucleotide position 11821 to 12945 of SEQ ID NO: 45),~~  
wbdN (nucleotide position 79 to 861 of SEQ ID NO: 56),  
wbdO (nucleotide position 2011 to 2757 of SEQ ID NO: 56),  
wbdP (nucleotide position 5257 to 6471 of SEQ ID NO: 56),  
wbdR (nucleotide position 13156 to 13821 of SEQ ID NO: 56),  
wzx (nucleotide position 2744 to 4135 of SEQ ID NO: 56) and  
wzy (nucleotide position 858 to 2042 of SEQ ID NO: 56).

60. (Currently Amended) A kit according to claim 58 or 59 wherein the ~~composition~~ nucleic acid molecule of step (b) comprises a nucleic acid molecule acting as a forward primer or a reverse primer selected from the group consisting of

Forward primer <del>(base position of SEQ ID NO:1)</del>	Reverse Primer <del>(base position of SEQ ID NO:1)</del>
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<del>739-757</del>	<del>1941-1924</del>
<del>925-942</del>	<del>1731-1714</del>
<del>925-942</del>	<del>1347-1330</del>
<del>1165-1182</del>	<del>1731-1714</del>
<del>8646-8663</del>	<del>9908-9891</del>
<del>8906-8923</del>	<del>9468-9451</del>
<del>9150-9167</del>	<del>9754-9737</del>
<del>9976-9996</del>	<del>10827-10807</del>
<del>10113-10130</del>	<del>10484-10467</del>
<del>10931-10949</del>	<del>11824-11796</del>
<del>11821-11844</del>	<del>12945-12924</del>
<del>12042-12059</del>	<del>12447-12430</del>
<del>12258-12275</del>	<del>12698-12681</del>

Forward primer sequence (nucleotide position of SEQ ID NO:2)	Reverse Primer sequence (nucleotide position of SEQ ID NO:2)
79-96	861-844
184-201	531-514
310-327	768-751
858-875	2042-2025
1053-1070	1619-1602
1278-1295	1913-1896
2011-2028	2757-2740
2110-2127	2493-2476
2305-2322	2682-2665
2744-2761	4135-4118

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2942-2959	3628-3611
5257-5274	6471-6454
5440-5457	5973-5956
5707-5724	6231-6214
13261-13278	13629-13612
13384-13401	13731-13714

primers shown in the Table above.

61. (Currently Amended) A kit according to claim 58 or 59 wherein the nucleic acid molecule ~~composition of~~ step (a) comprises a forward primer and a reverse primer selected from the group consisting of

<del>Forward primer</del> <del>(base position of SEQ</del> <del>ID NO:1)</del>	<del>Reverse Primer</del> <del>(base position of SEQ</del> <del>ID NO:1)</del>
<del>739-757</del>	<del>1941-1924</del>
<del>925-942</del>	<del>1731-1714</del>
<del>925-942</del>	<del>1347-1330</del>
<del>1165-1182</del>	<del>1731-1714</del>
<del>8646-8663</del>	<del>9908-9891</del>
<del>8906-8923</del>	<del>9468-9451</del>
<del>9150-9167</del>	<del>9754-9737</del>
<del>9976-9996</del>	<del>10827-10807</del>
<del>10113-10130</del>	<del>10484-10467</del>

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<del>10931-10949</del>	<del>11824-11796</del>
<del>11821-11844</del>	<del>12945-12924</del>
<del>12042-12059</del>	<del>12447-12430</del>
<del>12258-12275</del>	<del>12698-12681</del>

Forward primer sequence (nucleotide position of SEQ ID NO:2)	Reverse Primer sequence (nucleotide position of SEQ ID NO:2)
79-96	861-844
184-201	531-514
310-327	768-751
858-875	2042-2025
1053-1070	1619-1602
1278-1295	1913-1896
2011-2028	2757-2740
2110-2127	2493-2476
2305-2322	2682-2665
2744-2761	4135-4118
2942-2959	3628-3611
5257-5274	6471-6454
5440-5457	5973-5956
5707-5724	6231-6214
13261-13278	13629-13612
13384-13401	13731-13714

forward and reverse primers shown in the Table above.

62. (Cancelled)

63. (Currently Amended) A method according to claim 46 or 47 wherein the sample is selected from the group consisting of a sample derived from food, a sample derived from faeces and a sample derived from a patient or animal.

64-65. (Cancelled)

66. (Currently Amended) A kit for identifying the H and O serotype of E. coli ~~E. coli~~, the kit comprising:

(a) at least one primer according to claim 37 ~~or a composition according to claim 39~~; and

(b) at least one nucleic acid molecule selected from the group consisting of:

~~wbdH (nucleotide position 739 to 1932 of SEQ ID NO: 45),~~  
~~wzx (nucleotide position 8646 to 9911 of SEQ ID NO: 45),~~  
~~wzy (nucleotide position 9901 to 10953 of SEQ ID NO: 45),~~  
~~wbdM (nucleotide position 11821 to 12945 of SEQ ID NO: 45),~~  
wbdN (nucleotide position 79 to 861 of SEQ ID NO: 56),  
wbdO (nucleotide position 2011 to 2757 of SEQ ID NO: 56),  
wbdP (nucleotide position 5257 to 6471 of SEQ ID NO: 56),  
wbdR (nucleotide position 13156 to 13821 of SEQ ID NO: 56),  
wzx (nucleotide position 2744 to 4135 of SEQ ID NO: 56) and  
wzy (nucleotide position 858 to 2042 of SEQ ID NO: 56).

~~36-~~ 67. (Currently Amended) A kit for identifying the H serotype of *E. coli*, the kit comprising a nucleic acid

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molecule according to claim 32 and one or more nucleic acid molecules comprising the nucleotide sequence ~~of any one~~ of SEQ ID NO: ~~1 to 12, 14 to 44, 46 to 55 or 57 to 68 or a part~~ thereof.

~~37.—68.~~ (Currently Amended) A kit comprising a nucleic acid molecule according to claim 32 and one or more nucleic acid molecules comprising ~~the nucleotide sequence of any one of~~ SEQ ID NO: 56 or 57 ~~1 to 12 or 14 to 68 or a part thereof.~~

Please add new claim 69 as follows

69. (New) An isolated and purified nucleic acid molecule comprising the nucleic acid sequence from position 586 to 810 of SEQ ID NO:13.